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# МОРСКОЙ СБОРНИК

## SOVIET NAVAL DIGEST

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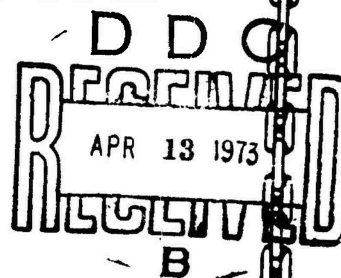
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THE NUCLEAR-POWERED SUBMARINE LENINSKIY KOMSOMOL

The nuclear-powered submarine LENINSKIY KOMSOMOL received its name from its predecessor, the submarine M-106 which was built through the resources of the working youth of the Southern Urals and was turned over to the Northern Fleet in 1943. Time and again the crew of the submarine distinguished itself in the struggle against the Fascists. The new generation of submariners of the Red Banner Northern Fleet continue with honor the combat traditions of their older comrades.

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Ten years ago Captain 2nd Rank L. Zhil'tsov, Commanding Officer of the LENINSKIY KOMSOMOL and Engineer Captain 2nd Rank R. Timofeyev, the engineering officer, were awarded the high decoration of Hero of the Soviet Union for the successful accomplishment of a special mission of the government. Many of the navymen of the nuclear-powered submarine received orders and medals. The whole country knew about the crew of the submarine. In subsequent years, the personnel of the LENINSKIY KOMSOMOL have tirelessly improved their combat training and more than once have come forward as initiators of competition. In 1968 in commemoration of the 50th Anniversary of the All-Union Lenin Young Communist League, the submarine's Komsomol organization was awarded the memorial banner of the Minister of Defense and the Main Political Directorate of the Soviet Army and Navy for its successes in combat and political training.

Presently the submarine crew is also in the leading ranks of the competitors for a fitting welcome to the 50th anniversary of the formation of the USSR and the 50th anniversary of Komsomol's patronage over the Navy. Thus, all the submariners in the navigation department are otlichniki\* in combat and political

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\* One who has been declared outstanding by his CO in combat and political training.

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training and 1st and 2nd class specialists. The navymen of the communications subunit are also accomplishing their missions successfully.

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\* Numbers in right margin indicate original pagination.

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NAVIES IN WAR AND IN PEACE

by Hero of the Soviet Union, Admiral of the Fleet of the Soviet Union S.G. Gorshkov

On 22 June 1941 the perfidious attack by Hitler /13  
Germany interrupted the peaceful labor of the Soviet people. A savage armed struggle unprecedented in scale had begun between the most reactionary Fascist state and the first Socialist country.

The war did not catch our fleets unawares, despite the fact that in the very first hours of it many naval bases were subjected to attacks by the enemy air force. The Soviet Navy did not lose a single warship or aircraft from the enemy's initial blow. The Hitlerites also did not succeed in achieving another aim--the planting of influence mines in the areas of our bases to prevent combatants from putting to sea.

From the very first day of the war the Soviet Navy engaged in single combat with the enemy naval forces which were supported by a third of the air forces and which had considerable strategic advantages. In particular, they were able to maneuver forces from theater to theater and create numerical superiority in areas where the more important missions were being executed. For example, in the period of the most intense battles around Leningrad, the German command concentrated a major grouping of surface ships in the Baltic Sea to destroy our Fleet. A similar grouping was subsequently also created in the North in order to cut our foreign sea communications. In the period of the battles for Odessa and Sevastopol, the Hitlerites transferred powerful groupings of bomber and torpedo aircraft from the Mediterranean to the Black Sea. In addition, the surface ships, submarines, and aircraft of Germany and also the naval forces of her satellites operated constantly in all of our theaters.

On the other hand, our Navy's capabilities for intratheater maneuver were very limited. Thus, the Northern Sea Route permitted the transfer of units of naval forces from the Pacific Ocean to the North and back again, but first, this could only be done once a year, and secondly, this required two to three months.

Soon after the outbreak of war intratheater maneuvering using the inland waterways had to be curtailed due to the fact that the main canals turned out to be in the zone of the ground fronts. Even the transport of patrol boats and small submarines by railroad did not satisfy requirements.

The withdrawal of the Soviet Army toward the East made the conditions for basing our fleets much worse. Thus, by the autumn of 1941 the Red Banner Baltic Fleet already was unable to base itself at points in the Leningrad--Kronshtadt--Lavensaari region which were in range of enemy guns. The Black Sea Fleet had to move its bases to ports on the Caucasian coast which were not equipped for this. Nevertheless, from the first to the last day of the war our fleets conducted active combat operations. Submarines put to sea to seek out and destroy enemy warships and transports. Aviation and surface ships also continually sought out the enemy and destroyed him on the high seas, and in coastal waters and bases, and attacked shore objectives and airfields in enemy territory. The activity and the constant desire to seek the enemy out and attack him everywhere which was displayed at all command levels in all of our fleets--this is the finest characteristic trait of the command personnel of the Soviet Navy and of their training and education system.

The battle against the sea communications required vast efforts. In the course of the entire war submarines, aircraft, PT-boats, destroyers, and coastal artillery destroyed enemy ships with troops and cargoes. These operations were conducted systematically and probably there was not a single day which did not bring success in the execution of this mission. Even when in order to put to sea the Baltic Fleet submarines had to pass through the Gulf of Finland, which was literally saturated with mines and covered by several anti-submarine positions, the enemy constantly felt the force of the attacks by our Navy. The Northern Fleet retained control over the solitary sea route by which the German troops in Norway and in Northern Finland were reinforced and by which nickel was exported from Petsamo. The Black Sea Fleet men inflicted even greater losses against the enemy sea communications. /14

The opposition against sea shipments considerably aided Soviet Army units on the ground fronts, since it hindered the enemy's capability to significantly

reinforce his groupings with manpower, as well as with fuel, ammunition, and foodstuffs which he needed. During the war Soviet navymen destroyed about 1300 transports with a total displacement of 3,000,000 tons on the enemy sea routes and sunk more than 1200 combatants and auxiliaries. It is quite natural that this had a great effect on the course of the armed struggle on the Soviet-German ground front where the outcome of the war was decided.

According to incomplete data from the headquarters of the 17th German Army, during the evacuation of the Fascist troops from the Crimea in the period from 3 to 13 May 1944 alone the men of the Black Sea Fleet destroyed more than 42,000 officers and men.\*

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\* Vtoraya mirovaya voyna 1939-1945 g.g. (The Second World War. 1939-1945), Voenizdat, 1958, p. 567.

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This was a considerable contribution by the Black Sea Fleet in creating favorable conditions for the conduct of the subsequent operations of our ground forces in the Southwest sector.

The security of our own sea shipping occupied an important place in the combat operations of the fleets throughout the entire course of the war. These shipments acquired vast significance after the enemy cut the Murmansk Railroad. In the Black Sea they were vitally essential in the period of the defense of Odessa, Sevastopol, and of the Northern Caucasus, when conducting the Kerch-Feodosiya landing operation, in the Baltic during the defense and evacuation of Tallinn, Khanko, and the Moon Sound Islands, in reinforcing the groupings of our troops in the Oranienbaum beachhead, and in the subsequent liberation of the Baltic Republics.

Our fleets and flotillas executed extremely important missions in supporting troop and national economy shipments along water routes near the fronts, especially on Lake Ladoga when the difficult situation arose at Leningrad, and along the Volga. In the war years more than 100 million tons of various types of goods, of which a considerable part were of petroleum and petroleum products, were delivered along inland waterways. In addition, naval forces supported the shipment of 17 million tons of goods over foreign sea routes. Behind these figures are thousands of ship

cruises and aircraft flights, hundreds of combat clashes with surface ships and submarines, the repulsing of enemy air attacks, and the surmounting of thick mine-fields.

However the activity of our fleets was not limited to battling the enemy at sea, although the execution of this mission required great daily efforts by the forces. Our fleets had to simultaneously execute the important mission of cooperating with the coastal units of the Soviet Army defensively and offensively in support of the stability of the strategic flanks of a vast front stretching from the Black Sea to the Arctic Ocean. And the more complex the situation became on land, the more decisive and active the fleet operations became in carrying out this strategic mission and also in defending the major coastal administrative and political centers, naval bases, and ports.

It is difficult to overestimate the role of the Black Sea Fleet in the defense of the more important ports and in giving stability to the southern flank of the ground front. The successful and prolonged resistance in the deep rear of the enemy by the Odessa defensive region, whose garrison included many navymen, was possible only owing to the constant aid from the sea of warships and the uninterrupted delivery of everything necessary to the besieged city. The heroic defense of Odessa, by tying up the entire Rumanian Army for more than two months, held up the progress of the southern flank of the "South" group of armies and disrupted the strategic plans of the Hitler command.

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In September 1941 a real threat arose of an enemy breakthrough into the Crimea and on 30 September the General Headquarters of the Supreme High Command issued the directive which informed of its decision to evacuate the Odessa region and to reinforce the defense of the Crimean peninsula with its troops.

In carrying out the orders of the General Headquarters, the Black Sea Fleet delivered the troops defending Odessa to the Crimea without losses where they took part in the defense of Sevastopol.

The defense of Sevastopol tied up a three-hundred-thousand-man enemy grouping for eight months and did not permit it to engage in the offensive in the south.

Moreover, the retention of Sevastopol in our hands eliminated the possibility of the Fascists using the sea route to feed the southern group of armies and prevented them from breaking through to the ports of the Northern Caucasus.

In a telegram of 12 June 1942 the Supreme Commander in Chief gave the following appraisal of the actions of the forces defending Sevastopol: "The selfless struggle of the people of Sevastopol serves as an example to heroism for the entire Red Army and the Soviet people."

A communication by the Soviet Information Bureau in connection with the abandonment of Sevastopol said: "The military and political importance of the defence of Sevastopol in the Great Patriotic War is very great to the Soviet people. In tying up a large number of German-Rumanian troops the defenders of the city confused and shattered the plans of the German command. The iron tenacity of the people of Sevastopol was one of the most important causes for the failure of the notorious German 'Spring offensive'. The Germans lost time and speed, and suffered great losses in manpower. Sevastopol was evacuated by the Soviet troops, but the defense of Sevastopol will go down as one of its brightest pages in the history of the Great Patriotic War. The utter courage, the fury in battle with the enemy and the selflessness of the defenders of Sevastopol inspired the Soviet patriots on to further heroic feats in the struggle against the hated occupiers."\*

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\* Pravda, 4 July, 1942.

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The Fascist offensive in the Caucasus carried the real threat that they would seize this most important region and alter the military-political situation in the Black Sea theater in connection with the possible entry of Turkey, which was then biding her time, on the side of Hitler Germany. The Black Sea Fleet's existence depended on our Army's holding the Caucasian coast. Yet even the stability of the ground forces defending the littoral areas of the Caucasus area, in turn, was supported by naval operations. Through the combined efforts of the Army and Black Sea Fleet the battle for the Caucasus was won.

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In reviewing this battle, Marshal of the Soviet Union A. A. Grechko writes: "In the defensive period of the battle for the Caucasus, of the nine defensive operations conducted by Soviet troops from July to December 1942, the Black Sea Fleet and the Azov Flotilla directly participated in six.... The Black Sea Fleet and the Azov Naval Flotilla, by acting closely in concert with ground troops, rendered them a great deal of aid in the defense and defeat of the Germans in the Caucasus.... The Black Sea Fleet and the Azov Flotilla rendered considerable support to the ground forces in the offensive period. By landing landing parties of naval forces the troops were able to break through the powerful long term defense of the enemy.... The most important task handed the Black Sea Fleet in the period of the battle of the Caucasus was the reliable support of our sea communications along the Caucasian coast and it was successfully carried out. The Caspian Flotilla...provided the defense of sea routes which were extremely important to the entire country.... The Black Sea Fleet and the Azov and Caspian Flotillas carried out the tasks handed them in the battle for the Caucasus with honor."\*

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\* A. A. Grechko. Bitva za Kavkaz. (The Battle for the Caucasus), Voenizdat, 1969, pp. 466-467.

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In the period of the Hitler offensive against Leningrad the Red Banner Baltic Fleet rendered Red Army units extremely great aid. In defending Liepaya, Tallinn, the Moon Sound Islands, and the Khanko naval base together with the ground troops, it tied up a hundred-thousand-man grouping of enemy forces. The stability of the defense of Leningrad, especially at the beginning of its siege, was determined to a great degree by the energetic actions of the Baltic Fleet forces. Throughout the war it retained the Oranienbaum beachhead and diverted major enemy forces toward itself. The Red Banner Baltic Fleet sent more than 83,000 nonrated and rated men, and officers to fight the enemy on land. At Leningrad there was not a division in which a Baltic Fleet man was not fighting. The powerful guns of the Fleet served as a firm fire shield and the foundation of the defense of the close approaches to the heroic city. Its striking power was supplemented by the unprecedented support and irresistibility of naval infantry attacks.

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Through attacks by its ships, and planes against groupings of German Fascist troops heading toward Murmansk, by landing landing parties and naval infantry operations,



and by hindering the enemy's shipping, the Northern Fleet played a decisive role in disrupting his offensive on the right flank of the Soviet-German front. And only owing to the fact that the Northern Fleet sent everything it had to the ground front to aid our troops, which amounted to a little more than one rifle division in strength, did they succeed in stopping the offensive of the German mountain corps on the approaches to Murmansk. More than 9,000 officers and men of the Northern Fleet were fighting on land at that time. The retention of the ice-free port of Murmansk and the Polyarnoye naval base was of extremely important operational-strategic significance: throughout the entire course of the war it permitted using the shortest sea route connecting the Soviet Union with its allies of that time, the successful execution of missions in defense of its communications, the disruption of the enemy's shipping, and it permitted concerted actions with the ground troops defensively and later also offensively.

In the war years the Navy sent a total of more than 400,000 nonrated and rated men and officers to the ground fronts. From these more than 40 brigades of naval infantry and naval rifle brigades, six individual regiments, and a large number of individual battalions and detachments were formed. These forces and units were distinguished by their exceptionally high combat qualities and therefore were employed by the Army command on the more important sectors of the front. Seven naval rifle brigades were in action in the most intense period of the battle for Moscow as a part of the troops of the Western Front.

In addition, some 100,000 naval infantrymen who remained within the Fleets and Flotillas carried out the land defense of the naval bases and islands and participated in amphibious landings which rendered real aid to units of the Soviet Army.

After the Soviet Armed Forces had gained the strategic initiative, cooperation with the coastal groupings of troops remained one of the basic missions of the Navy, although the content of the mission had significantly changed, the operational scales had increased, and the conditions for carrying them out had become even more complicated due to the losses of individual basing areas. Yet despite this the Fleets successfully handled all of the missions with which they were charged.

For the Red Banner Fleet this was expressed in the participation of the air force, the long-range artillery, and brigades of naval infantry in breaking through the blockade of Leningrad, in the transporting of troops to the Oranienbaum beachhead, in the landing of landing parties in support of our troops ashore with gunnery fire and air strikes, in increasing the scope of operations against sea communications, and in the destruction of the enemy troops being evacuated by sea from Liepaya, Memel (Klaipeda), Danzig (Gdansk), Swinemuende (Swinoujscie), and other ports.

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By the Novorossiysk landing operation the Black Sea Fleet began the liquidation of the Taman beachhead of the enemy, supported the breakthrough of the Kerch Strait by our troops, and seized a beachhead in the Crimea. The follow-up operations by our Fleet hindered the evacuation of the German troops from the Crimea, and the landing of a landing party hastened the liberation of the southern regions of the country and also of Bulgaria and Rumania.

The Northern Fleet also played an important role in the defeat of the enemy on the extreme right flank and in the liberation of the Pechenga Oblast and of Northern Norway.

By using naval ships and merchant ships suitable for landing troops the fleets landed more than 110 landing parties with a total strength of 250,000 men in the course of defensive and offensive operations in the coastal areas. At the same time active fleet operations did not permit the enemy to land a single landing party on our shore, although he had specially designed landing ships at his disposal and had experience in the successful conduct of such operations in the Western European theater of military operations.

The Azov, Ladoga, Onezhkoye, Beloye More, Volga, Danube, and other Flotillas which were created on the internal seas, large rivers, and lakes operated successfully. They rendered direct and important aid to the ground troops both defensively and offensively. The Beloye More Flotilla, for example, executed missions associated with the use of the sea routes in the Arctic areas and the transit of combatants and convoys via the Northern Sea Route. The Caspian Flotilla reliably defended our main petroleum line in the Caspian Sea. The Ladoga Naval Flotilla supported the functioning of the "Lifeline", the solitary route connecting besieged Leningrad with the country. With intensive battles the Danube Flotilla

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covered more than 2,000 kilometers up the Danube River and participated in the liberation of six European states from the Fascist yoke. Marshal of the Soviet Union V. Chuykov gives a vivid appraisal of the operations of the Volga Naval Flotilla in the battle of Stalingrad: "Let me briefly tell of the role of the navymen of the Flotilla and of their feats: if they had not been there, it is possible that the 62nd Army would have perished without ammunition and without food and would not have been able to carry out its mission."\* Navymen of the Pinsk Naval

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\* V. I. Chuykov, Nachalo puti (The start of the route), Voenizdat, 1962, p. 182.

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Flotilla heroically fought alongside units of the Red Army in the most serious period of the Great Patriotic War. In bloody defensive battles on river banks its ships supported the ground forces and participated in the defense of Kiev. The Dnepr Flotilla, which was born in 1943, participated in the Berlin operation and concluded its combat path on the Spree River.

The short, but intensive combat operations of the Pacific Fleet and the Northern Pacific and Amur Naval Flotillas played an important role by their offensive operations in the rapid occupation of the southern part of Sakhalin Island, the Kurile Islands, and the ports of Korea and in the rapid advance of Soviet troops into the depths of Manchuria. Owing to decisive landing operations the men of the Pacific Fleet severed the communications of the Japanese Kwantung Army with the home country and completed its complete encirclement.

Thus, the Navy throughout the entire war successfully carried out the missions with which it was charged in accordance with the needs of the armed struggle in the main theater where the outcome was decided. The operational and strategic employment of naval forces was determined by the need to closely tie its operational plans with the plans of the Army above all to defeat the main forces of the enemy on land. The Soviet Navy made a significant contribution to achieving a victory over a strong enemy, ensuring the stability of the strategic flanks of the ground front and comprehensive support of our troops defensively and offensively. In this most difficult of wars the Navy fully justified the hopes placed in it and the great trust of the Soviet people, and did its duty for the Motherland to the end.

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The experience of the Great Patriotic War once more affirmed the correctness of the basic principle of our military doctrine that victory over a strong enemy can be won only through the coordinated actions of all branches of the Armed Forces which were developed in harmony, well trained, prudently deployed, and supported in every way.

From the very outbreak of war many major problems arose for our Navy in the technical and operational-tactical plan. It was necessary in the shortest possible time under intense armed warfare conditions to eliminate the defects in peacetime combat training which were revealed in the course of the struggle and to solve the problems which could not be put off connected with the conduct of combat operations under unforeseen conditions. And it must be acknowledged that the career personnel of our Navy rose to the occasion: optimal ways were found of employing forces in operations in concert with ground troops defensively and offensively. In the course of the war a Soviet school of amphibious operations was formed with specific organization and operational methods for them. Submarine and Air Force tactics were developed which were modern for that period, and questions of the defense of bases from land, the organization of concerted actions and control of forces, and the support of their operations which arose in the course of the struggle were solved.

Soviet industry delivered a sufficient amount of combat and technical equipment for the needs of the Navy. The replacement of losses in ship inventory was very difficult in connection with our loss of a series of shipyards and with the changing over of considerable capacity of the shipbuilding industry to the construction of tanks and other armament for the Army. Therefore in the course of the war small combatants and patrol boats were mainly built. Despite these difficulties during the Great Patriotic War the Navy received from industry two light cruisers, 25 destroyers, escort ships, and minesweepers, 52 submarines, 15 large submarine chasers, and 873 different patrol boats. The quality of the Navy's armament and combat and technical equipment improved. Radar appeared aboard the combatants. New models of influence mine weaponry appeared. The Naval Air Force grew quantitatively and qualitatively; the number of torpedo-carrying aircraft more than tripled.

In the course of the war the Soviet Navy had to carry out two groups of missions simultaneously: first, to battle a strong enemy at sea who was steadfastly striving to seize the initiative and destroy our naval forces, and secondly, to support the stability of the strategic flanks of the front and act in concert with the ground troops offensively and defensively. This employment of the naval forces in the war was the only correct employment because it fully corresponded to the situation.

Due to the particular features of the conditions of armed combat with Hitler Germany, the main load lay on the shoulders of the Soviet Army. All other branches of the Armed Forces including the Navy acted in concert with the ground troops on whose operational success the outcome of the war depended. Our Navy carried out their own missions under more difficult conditions than the navies of other states, which, as a rule, did not have to aid their troops in the coastal areas daily, and protect their bases and important coastal points from attacks by the enemy from the land side. Yet under these difficult conditions our Navy showed itself to be an active and powerful attack force capable of changing the situation both in the sea areas and in the coastal strip of operations of the ground troops.

From the very first hours of the war, the Navy, as was noted above, went over to decisive operations against the sea enemy and conducted them uninterruptedly right up to the capitulation of Hitler Germany. These operations were the disruption of enemy sea communications, the delivery of strikes from the sea against naval bases, ports, and military-industrial objectives of the enemy, the destruction of his surface ships and submarines at sea, the blockading from the sea of the areas which were more important to the enemy for combat operations, active mine laying, and numerous landings of landing parties.

The losses of the enemy fleet attest to the intense naval warfare which demanded thousands of combat cruises by warships and aircraft sorties, and the conduct of numerous naval battles and operations. This struggle, continuing from day to day, in itself demanded extremely great efforts by the forces, but, indeed, in addition to this, the Navy had to still constantly participate in the direct support of the ground troops, which aided the achievement of victory on the Soviet-German front. Moreover, in delivering strikes against bases and sea communications and against enemy ship groupings, the Soviet Navy rendered support to the navies of our former allies, i.e., it made a weightly contribution to the general

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efforts of the anti-Hitler coalition in combatting the enemy's fleet in the oceanic theaters. Due to the activity of the Soviet Navy the German command was forced not only to retain significant forces of its own navy allocated to battling the Soviet Navy, but also to systematically reinforce them with ships and aircraft from the Atlantic Ocean and the Mediterranean and North Seas. Even in the most intense periods of the "Battle for the Atlantic" in 1941--1944, of the 141 submarines suitable for combat operations 29 were kept in the Black, Baltic, and Barents Seas.\*

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\* Yeremeyev, L. M. and A. P. Shergin. Podvodnyye lodki inostrannykh flotov vo vtoroy mirovoy voyne (Submarines of foreign navies in WW II), Voenizdat, 1962, pp. 43.

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The German command, not considering the "Battle for the Atlantic" the main area in the Second World War, concentrated almost all of its forces, including considerable naval forces, on the Soviet-German Front. Proof of this is Hitler's statement in January 1943: "We must clearly understand that this submarine warfare will be useless if we are unable to defeat Russia in the East."\*

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\* S. Morrison. The Battle for the Atlantic Won. Voenizdat, 1959, p. 80.

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Only owing to the Soviet Armed Forces, which themselves tied down the largest and best part of the armed forces of Hitler Germany, were the USA and England able to win the "Battle for the Atlantic", and also to construct a new giant merchant fleet, which was twice as large as the tonnage lost on the sea lanes, and to create vast forces to combat the German submarines: 133 convoy aircraft carriers, 1500 destroyers, frigates, and corvettes, 1900 submarine chasers, 1000 minesweepers, and several thousand aircraft.\*

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\* Potapov, I. N. Razvitiye voyenno-morskikh flotov v poslevoyenny period (The development of navies in the postwar period), Voenizdat, 1971, pp. 23-31.

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Thus, the Soviet Navy played an important role in the Great Patriotic War and, consequently, in the Second World War as a whole. Its steadfast, decisive opposition to the powerful maritime enemy and the retention of the initiative at sea in combat operations in the course of the entire war created conditions which ruled out employment by the enemy of such forms of armed combat as landing and antilanding operations. The German Fascist Navy was limited in the employment of sea communications even at the moment of hottest battles on the decisive ground fronts and was unable to support its own troops in situations which were critical for them. This was highly inspirational aid to the Soviet Army's troops, who were freed from the need to defend the long coastal expanse, and, because of this, to strengthen the force of their attacks in the main and decisive areas.

Another and no less important and crucial task and, in essence, the main component part of the Navy's effort was its direct participation in the defense and liberation of the coastal cities, ports, and naval bases, its constant support by its own forces of the coastal units of ground troops defensively and offensively, and also the active participation of naval personnel in the decisive battles on the ground fronts. This was a very weighty contribution to gaining the victory.

The Soviet Navy, having stood up to a strong enemy in a savage struggle, and having fulfilled all missions handed it, emerged from the war strengthened and hardened, while firmly maintaining its superiority in all naval theaters in the arena of the struggle. By their steadfastness in carrying out the assigned mission, by massive heroism of the personnel, and by fearless and unwavering belief in victory, the navymen demonstrated in the flames of the war their fidelity to their people, and an infinite devotion to the Communist Party and to the cause of Communism.

(To be continued)

Photographs- p. 15, caption: The Black Sea Fleet battle-ship PARIZHSKAYA KOMMUNA in firing position.  
p. 16, caption: Baltic Fleet navymen in defense of Leningrad.  
p. 17, caption: Preparation of Northern Fleet torpedo aircraft fliers for takeoff.  
p. 18, caption: Ships of the Dnepr Naval Flotilla on a combat cruise.  
p. 19, caption: Course to Chongjin.



WITH THE SHIPS, UNITS, AND FORCES OF THE FLEET

Red Banner Northern Fleet

The personnel of the outstanding submarine commanded by Captain 1st Rank Yu. Beketov achieved great success in the competition in honor of the 50th anniversary of the formation of the USSR. Here 15% of the personnel are master specialists\* and 50% are 1st class specialists. The crew has been awarded the Red Challenge Banner of the Komsomol Central Committee.

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\* Class Specialist-An officer or enlisted man who has passed the officer or EM proficiency test in his specialty. There are 3rd, 2nd, and 1st class specialists as well as master specialists.

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Captain 1st Rank Beketov is an example for subordinates, and trains and teaches them in accordance with the principle "Do it as I do it." He skillfully organizes the Socialist competition of officers, and rated and non-rated men and their training. As a result, many of the obligations assumed by the submariners in honor of the 50th anniversary of the formation of the USSR have been fulfilled ahead of time.

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A missile firing at sea against a high-speed low-flying target lay ahead. Beforehand the CO of the large ASW ship and the department head, Captain-Lieutenant G. Brusilovskiy, checked the readiness of the battery commanders and group leaders and of the operators to act when the "enemy" employed jamming. The ship officers have great experience in employing missile weaponry: the department is the best in the Fleet. The fire control officer, Captain-Lieutenant Brusilovskiy, and the officers and rated and non-rated men who participated in the firing worked smoothly and efficiently. The missiles accurately hit the target. One of the main obligations assumed for the glorious jubilee of the Soviet state was fulfilled.

/27

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Having set the buoys, the crew of the helicopter commanded by Captain V. Zanegin began the search for the submarine. Soon a signal came in from one of the buoys.



Then another began to work. There was no doubt: it is a submarine. The navigator, Lieutenant B. Zheludkov, quickly calculated the attack data. The bombs hit the target, raising columns of water. In preparing to worthily greet the 50th anniversary of the formation of the USSR, Zanegin's crew are carrying out all missions with high marks.

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The Fleet warmly greeted its future men--the graduates of the naval schools. With their first efforts with the characteristic energy of youth they have taken up their work: they are studying the ships, mastering their duties, and preparing themselves to pass the examination for independent command of a subunit. Lieutenants A. Koryakovskiy, V. Lapshov, A. Lobach, L. Stepanenko, and others have achieved notable successes.

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Dozens of memorials and obelisks have been established in the areas of the former battles in the rocky Kola country. And recently in Rybach' at the point of savage battles the ceremonial opening of a glory memorial was held. First Secretary of the Murmansk CPSU Oblast Committee V. Ptitsyn, CinC of the Northern Fleet Admiral G. Yegorov, participant in the defense of Rybach' Lt. General Ya. Skrobov (Reserves), and others arrived to pay homage to the memory of the defenders of the polar region.

Representatives of the present generation of Northern Fleet men have strived to continue and to expand the combat traditions of the men of the front.

#### Red Banner Pacific Fleet

The initiators of the Socialist competition in honor of the 50th anniversary of the Soviet Union in the Navy, the Guardsmen of the cruiser VARYAG, are confidently reaching the intended goals.

First Secretary of the Komsomol Central Committee V. Zhitenev visited on board the ship. He took an interest in how the Komsomol members live and work, and how they are fulfilling their assumed obligations. On behalf of the crew CPO Firsov reported to V. Zhitenev on their successes. Today aboard ship 60% of the personnel are otlichniki in combat and political training, and all of the fighting men are class specialists. Many of the navymen have mastered a related specialty. More than 2,500 miles have been

steamed on fuel which was saved. Ten rationalizing proposals have been introduced.

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The unit commanded by Colonel Ye. Sokolov is firmly maintaining its supremacy in the Socialist competition among the shore units of the Navy. The collective has borne the lofty title of outstanding for eight years already.

A demanding CO and a skillful educator, Colonel Ye. Sokolov thoroughly shares his wealth of experience with officers and petty officers. The unit maintains taut order according to regulations and here experience is borrowed from representatives of other subunits.

Many officers while executing their duties in an outstanding fashion engage in scientific work. Thus, last year A. Yevtsikhevich became a candidate of sciences, Senior Lieutenant V. Chursinov is working on his dissertation. At a conference held in the unit high ratings were given to works of Senior Lieutenants B. Kodadochka and P. Pirumov, Lieutenant A. Romantovskiy, and others. The results of their research have been published in the pages of scientific journals and bulletins.

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At the request of the youth of Siberia, one of the landing ships of the Pacific Fleet was awarded the name TOMSKIY KOMSOMOLETS. Recently the patrons were guests of the navymen of this ship. They became acquainted with the life and work of the Pacific Fleet men and the progress of the Socialist competition in honor of the 50th anniversary of the formation of the USSR. The Tosmkites decided to send the best representatives of the youth of the oblast to serve here. /28

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On the grounds of a submariner training subunit a memorial was unveiled to cadets who had perished in the Great Patriotic War. The students of this subunit wrote a vivid page in the annals of the Soviet Armed Forces. Podmoskov'ye--Staraya Russa--Zapadnaya Dvina--Berlin: this is the navymen's glorious combat path on land.

In 1942 cadet graduates aboard submarines in the division of Hero of the Soviet Union Captain 1st Rank A. Tripol'skiy made an unprecedented cruise through two oceans

and nine seas. In the spring of 1943 they were already beating the enemy as part of the Northern Fleet.

### Twice-Honored Red Banner Baltic Fleet

A meeting of the Fleet Military Council was held. The chief of the Construction Directorate of the Baltic Fleet made a report on "Measures for strengthening organizational and political education work and raising the responsibility of the career personnel for fulfilling the construction plan, strengthening military discipline, and Socialist obligations in honor of the 50th anniversary of the formation of the USSR."

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A conference was held in one of the garrisons on "Forms and methods of aesthetic and moral education of the personnel in light of the requirements of the 24th CPSU Congress." Procurator of the garrison Lt. Colonel A. Mosin, officers E. Semenov and Yu. Chesalin, and others spoke.

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A concluding lecture on "Pressing problems of Soviet military construction in the decisions of the 24th CPSU Congress" was held in a Marxist-Leninist training group of officers of the staff and political directorate of the Baltic Fleet. Fleet Chief of Staff Rear Admiral A. Kosov read the lecture.

/29

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A training session of young officers was held aboard the cruiser OKTYABR'SKAYA REVOLYUTSIYA on the theme "The subunit--the center of political education work on a long cruise." Of special interest was a speech by the leader of an outstanding group Lieutenant I. Kolesnik.

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A delegation of youths headed by the Komsomol Secretary Vet'yavichis of the Republic visited the leading escort ship KOMSOMOLETS LITVY. "We are carrying out your order," the fighting men assured them. They are emissaries of the Lithuanian Komsomol who in the Socialist competition in honor of the 50th anniversary of the formation of the USSR are in first place aboard the ship.

The ISKRA, a training ship of the Polish Navy, visited Riga and Baltiysk with a group of cadets. Navy-men of these garrisons held a friendship evening with the Poles, and organized excursions.

#### Red Banner Black Sea Fleet

Active preparation is underway in the Black Sea Fleet for the 50th anniversary of the formation of the USSR. In lectures, reports, and talks, commanding officers, political officers, and propagandists of the ships and units are revealing the comprehensive historical significance of this date in the life of the Motherland to the fighting men. Deputies are meeting with Black Sea Fleet navymen and with workers of Sevastopol and other cities. Thus, Deputy of the Supreme Soviet of the USSR CinC of the Black Sea Fleet Admiral V. Sysoyev spoke to the personnel of one of the fleet units, and also to voters of the Bakhchisaraysk rayon. He told of the activities of the USSR Supreme Soviet, how the mandate of the voters is being brought to life, and how the program of Communist construction and the decisions of the /30 24th CPSU Congress are being carried out.

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The personnel of the Fleet ships and units have expanded the active struggle for the right to be awarded the Jubilee Honorary Badge. The naval infantrymen have emerged as the initiators of it. Their slogan is: "An outstanding result on each day of training."

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The crew of the large ASW ship PROVORNYI has borne the title of outstanding for several consecutive years. And recently its Komsomol organization was awarded the Red Challenge Banner of the Black Sea Fleet Military Council for the best production of military technical propaganda. In competing for a worthy welcome for the 50th anniversary of the formation of the USSR, every nonrated and rated man, warrant officer, and officer is striving to raise his class specialist proficiency, and to master a second related specialty. Aboard the ship 66% of the personnel are otlichniki in combat and political training, and many are class specialists. Right now the crew is on a cruise far from its home shores, confidently executing the assigned missions.

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The crews of the aircraft where Major S. Gryazev, and Captains Yu. Vorob'yev and V. Kutumov are the aircraft commanders successfully conducted missile firings. Executing a firing exercise for the first time, the young crew of V. Kutumov received an outstanding grade.

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The Black Sea Fleet command met with naval school graduates arriving to serve in the Fleet. Admiral V. Sysoyev, Rear Admiral A. Paskhin, the commander of one of the surface ship forces, and also the chief of the political department of a submarine unit spoke to the lieutenants. They gave the officers a send-off to their practical work.

#### Red Banner Caspian Flotilla

A thematic evening on "V. I. Lenin and the Navy" was held in the X-th unit. Veteran navymen who came to serve in the Navy via Komsomol sponsorship spoke at the evening. Thus, G. Rulev told those gathered about the feats of the Baltic Pacific Fleet men, A. Anakhatunyan told of the heroism and courage of the Black Sea Fleet men in the last war, and K. Vagner told of the deeds of the men of the Caspian Fleet in the Civil War.

On the threshold of a remarkable date, the 50th anniversary of the formation of the USSR, the veterans called on the navymen to expand the glorious combat traditions of their fathers and older brothers and to hold high the banner of defender of the Motherland.

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Warrant Officer V. Bondarenko enjoys deserved prestige among the personnel of the subunit. He is a 1st class specialist in two specialities: as a radarman and a sonarman.

The navymen of the subunit where Bondarenko is the Party organizer successfully handle all tasks and exercises and are distinguished by their high degree of discipline and combat schooling.

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Training sessions of Flotilla Komsomol workers were held. Member of the Military Council and Chief of

the Political Department of the Caspian Flotilla Rear Admiral P. Burlachenko delivered a report on the "Course of the preparations for the 50th anniversary of the formation of the USSR and measures to further improve the activities of the primary Komsomol organizations."

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"The Southern Wind" is the name of an amateur variety artistic collective of Caspian navymen led by Warrant Officer I. Mesronyan. Its program includes songs on naval and military patriotic themes. The leading soloists of the orchestra, Veroniki Levchuk, Anatoliya Vizirov, and Vyacheslav Yatsenko are warmly received when they play.

The performances of the ensemble enjoy deserved success with Fleet audiences and with fighting men of isolated garrisons.

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Photograph-p. 26, caption: Leading officer Senior-Lieutenant-Engineer V. Antonevich checks the action station of Class Specialist Seaman N. Khalbayev.  
p. 28, caption: The best watch officer of the submarine, Captain-Lieutenant M. Terekhov, standing watch underway. First Class Specialist Senior Seaman V. Yevtushenko is aiding him.  
p. 29, caption: The young navigator Lieutenant F. Guseynov enjoys respect and prestige aboard ship.

COUNTERING THE ENEMY'S INTELLIGENCE

by Captain 1st Rank N. Gordeyev (Retired)

(Based on material from the foreign press.)

The surprise attack on Pearl Harbor by the Japanese in December 1941 which led to major losses by the US Navy was the result of unsatisfactory American counterintelligence against the Japanese. And, on the other hand, strong German counterintelligence vis-à-vis the Americans and British ensured the secret concentration of their troops and the delivery of a surprise attack in December 1944 against the enemy in the Ardennes which forced British Prime Minister W. Churchill to appeal to the Soviet government for aid.\*

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\* This aid was rendered by the Soviet Army which launched a powerful attack ahead of schedule and saved the allies from defeat through this.

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From an analysis of the Second World War and the local wars following it, it is becoming clear that countering the enemy's intelligence is not limited to combating its agents. It also includes other measures with respect to concealing own forces, equipment and also the intentions of the high command from him. For example, this includes: the protection of state and military secrets by personnel; the introduction of strict censorship on open press publications, radio and television broadcasts, and correspondence by the population; strategic and tactical concealment; increasing the reliability of ciphers and codes and communications secrecy; counterintelligence activity, etc.

Tactical concealment has always played a primary role in deceiving the enemy: not a single significant operation (especially an offensive one) has been conducted without attendant support of the secrecy of its preparation and the achievement of surprise, which has always fostered success. As an example we may cite the North African, Sicily, Normandy, and Inchon amphibious operations, the attack of Japanese naval forces on the American base of Pearl Harbor, the attacks of British aircraft on the Italian base of



Toronto and American aircraft against Tokyo, the evacuation of Japanese troops from the islands of Attu and Kiska, etc.

It should be noted that many allied operations turned out to be successful not just because of the effectiveness of counterintelligence measures, the creation of a superiority in forces, etc., but also owing to the favorable conditions for conducting the operations which came about as a result of the successes of the Soviet Armed Forces on the fronts of the Great Patriotic War. Thus, by the start of the Sicilian operation, the Germans had not yet managed to recover from the major strategic defeat at Stalingrad and were continuing to withdraw under the onslaught of the Soviet Army. At the moment of the allied landing at Normandy the Soviet Army was already routing the Hitler horde beyond the Dnepr and Bug rivers. The German Command, concerned by the unceasing approach of the Soviet troops toward the borders of Germany, not only stripped the so called Atlantic Wall, but also did not produce any sort of significant opposition to Anglo-American intelligence in Western Europe.

The methods of operational concealment employed in WW II were very diverse: limiting the number of persons participating in the development of a plan of operations, giving missions to those executing them in an amount not exceeding the actual amount of information needed by the given forces and as late in time as possible, operations in false directions, etc. In this connection, all staff activities were arranged so that they themselves would not know whether the plans which they were developing were real or were to serve to deceive the enemy. In order to hide the command's intentions from enemy intelligence, the operation was conducted as a rule on a broad front several times greater than the area of the forthcoming combat operations and at a pace normal for the preceding period. Its activity was increased gradually and carefully in order not to evoke suspicions. They attempted to keep the intensity of transport operations, radio traffic, radio countermeasures and preliminary attacks against enemy forces in the preoperational period at the level to which he was accustomed. Favorable geographical and weather conditions were used to hide the transport of forces and ensure operational surprise. /32

For counterintelligence purposes periodic changes were made in code names of operations and designations of forces and groupings, and pseudonyms were introduced for the commanders of large-scale force groupings.



Taking into account that an important source of intelligence data is radio traffic, the belligerents devoted a great deal of attention to radio countermeasures: the operating time of radio transmitting stations was limited, frequencies were changed, sometimes complete radio silence was introduced, jamming was carried out, decoy transmitters were employed, transmission time was reduced to fractions of seconds by employing high-speed equipment, etc.

Considerable effort was devoted to deceiving the enemy. Thus, owing to operational concealment the Sicilian and Normandy operations turned out to be surprises for the German command with respect to place and time. Deception was achieved by spreading false rumors through the press, radio, and agents, backed up by other measures such as the "palming off" to the enemy of artfully compiled false operational documents, whose reliability would be confirmed by taking certain actions called for in the documents. Thus, prior to the Sicilian landing operation, British intelligence ejected a "marine officer" from the torpedo tube of a submarine. In this case the documents found on him so deceived the German command that it weakened the forces where the allied troops subsequently landed. The Germans achieved similar results with the aid of an aircraft which "lost" its way and which made a "forced" landing in Belgium. The pilot of the aircraft had fictitious operational documents on him according to which the invasion of France was scheduled to take place through Belgium, although in actuality the Germans had chosen another direction--through Luxemburg, the Ardennes, and Northern France (as a result, the main mass of the Anglo-French troops concentrated in Belgium was cut off and driven to the sea at Dunkirk.)\*

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\* C. Nimitz and E. Potter, *The War at Sea (1939--1945)*. Translation from the English. Voenizdat, 1965, p. 181; *Istoriya Velikoy Otechestvennoy voyny Sovetskogo Soyuza 1941-1945* (The History of the Great Patriotic War 1941--1945), Voenizdat, 1960, p. 216.

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The foreign military press notes that methods of military deception are being developed parallel with the improvement of armament, strategy, and tactics. A great deal of attention is being devoted to the carefulness of preparation and to the likelihood of deception. Otherwise, the experts believe, instead of tricking the enemy, one may reveal his own secrets.\* At the same time they

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\* Evan Montague. *The Man Who Never Was*. Translation from the English. Voenizdat, 1960, p. 5.

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caution against a lax approach to enemy documents which fall into their hands which may be specially fabricated to deceive the other side.\*

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\* R. Hillsman. Strategic Intelligence and Political Decisions. Translation from the English. Foreign Literature Publishing House, 1957, p. 24.

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The approach to deception is different in different countries. Thus, in England, it is believed that publicity not coming from a higher source (publications in the press, radio and TV broadcasts, speeches, etc.) deceive the enemy more than information issuing from government organs. In the USA, on the other hand, they normally stick to publications of reports issuing from official organs.\* /33

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\* E. Kingston-MacClorrey. Military Policy and Strategy. Translation from the English. Voenizdat, 1963, p. 90.

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All measures with respect to deceiving the enemy are combined with demonstrative actions by forces in secondary and diversionary areas with the widespread employment of decoy targets. In this connection, the personnel participating in such undertakings as a rule do not know their true role in the operation. At the same time the preservation of secrets during the war was ensured by a strict counterespionage regime, which eliminated the possibility of the premature revelation to the enemy of the true significance of the measures being taken. Strict punishment was handed out to betrayers of the secrets. Even involuntary witnesses to one secret or another were already doomed. Thus, the workers building launch pads for German rockets were shot by the Gestapo upon completion of the work.\* The American fleet which was preparing for an air attack on Tokyo in April 1942 mercilessly destroyed all fishing boats together with their crews who fell in their path.\*\*

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\* Yu. Mader. The Secret of Huntsville. Translated from the English. Politizdat, 1965, p. 11.

\*\* F. S. Sherman. American Carriers in the War in the Pacific. Translated from the English. Voenizdat, 1965, p. 65.

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To combat the leakage of secret information strict censorship was established over printed publications and the correspondence of the population. When it weakened,

the enemy succeeded in following changes in the composition and movement of forces, the nature of their activities, losses, etc. on the basis of an analysis of these materials.\*

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\* Irving Haymont. Tactical Intelligence in Modern Warfare. Translation from English. Voenizdat, 1963, p. 44.

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In the course of the past war cryptographers devoted great efforts to improving the reliability of cyphers and codes. However, it was far from everywhere that this was successful. The Germans, for example, succeeded in uncovering the main code with the aid of which control over the movement of allied convoys was implemented. For two and one half years they knew the location of the convoys and the system of their screens, which permitted them to inflict considerable losses on them.\* American intelligence, having gained the key to the Japanese naval code, made it possible for the US naval command in the Pacific to know the direction of the Japanese intentions immediately after they had made one decision or another.\*\* It is interesting to note that 800 officers and men were engaged in deciphering intercepted Japanese radio transmissions in the USA in 1941.

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\* S. Roskill. The Navy and War. Translation from English. Vol. II, Voenizdat, 1970, p. 107, 183.

\*\* M. Futida, and M. Okumiya. The Battle of Midway Island. Translated from the English. Voenizdat, 1958, p. 153.

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In the Second World War tactical concealment of important military objectives was widely used including ships in harbors, shore facilities, and so forth. Thus, owing to camouflage the German ships located in Brest and the docks at Plymouth were not destroyed. Many objectives did not suffer from enemy attacks only because his reconnaissance did not detect them or it was misled by false targets. Of the 887 flights of German aircraft against objectives in England more than half were against decoy targets. For weakly defended targets tactical concealment was essentially the only means of protection from detection and subsequent destruction.

Concealment methods were continuously improved in the course of the war. Cunning methods of deceiving the enemy combined with feinting and diversionary operations were in the forefront. Methods directed against electronic

intelligence means and fire control equipment were being constantly upgraded and also underground sunken facilities possessing low optical and radar contrasts against the surrounding background were built. All forms of concealment were integrated and calculated to ensure secrecy from several means of intelligence.

In the opinion of foreign experts in the postwar period the role of concealment was increased considerably owing to the danger of destruction by the enemy's nuclear weaponry of important objectives detected by reconnaissance. Therefore tactical camouflage, while being an effective method of deceiving the enemy, at the same time must meet the needs of antinuclear defense.\* As for strategic concealment, bourgeois experts recommend turning great attention to secrecy with respect to the preparation of an

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\* The Tactics of a Modern Joint-Forces Battle. Collection of translated articles. Voenizdat, 1961, p. 31.

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operation and to delay as long as possible the time when the enemy discovers its concept, and to deceive him on the location and time of attack. In this connection by taking into account that the enemy will more easily draw false conclusions on the basis of actual facts, it is essential that information on them reach the enemy through normal intelligence channels. In this case strict secrecy in carrying out measures to deceive the enemy and the ability to predict his reaction to the concealment measures being taken will guarantee the success of the concealment.\*

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\* Irving Haymont. Tactical Intelligence in Modern Warfare. p. 93-94.

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Concealment of naval bases, population centers, and large stationary facilities is considered unattainable because when satellite reconnaissance means are employed they become targets which are well known and "zeroed in on" anyway. The covering of less major targets (e. g., missile launch positions) from enemy reconnaissance is much easier. In addition, they can be backed up by decoy targets disposed over a wide territory. In addition, as was reported in the foreign press, it is possible to build fictitious nuclear weapons depots to which ordinary logistical goods can be transported under a strengthened guard. Such measures are counted on to deceive the enemy as to which storage points are real and which are decoys.\*

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\* Ibid, p. 93.

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Presently the foreign press indicates that there is no period of a gradual transition from peace to war, and therefore concealment of the most important objectives must be implemented in a timely manner taking into account the introduction in peacetime of reconnaissance using artificial earth satellites, high-speed aircraft, electronic means, etc. Therefore a prolonged stay of a force of combatants in one place is undesirable. In any case this period should not exceed the time necessary for enemy intelligence to present its command with sufficient data to make decisions when necessary on the employment of nuclear weaponry against the force.\* Taking this into account, the US Navy and the NATO

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\* Op. cit. The tactics of a Modern Joint-Force Battle.  
p. 57.

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Allied Naval Forces are employing auxiliary ships extensively. Floating storehouses and repair shops supply and service combatants not only at their anchorages but also in any area of the World Ocean.

To counter foreign intelligence more effectively foreign experts recommend devoting more attention in peacetime combat training to the study of equipment for detecting targets from the air and the concealment of objectives.\* In this connection, it is considered impermissible to allow any sort of simplifications when carrying out training concealment activities and, in particular, the building of decoy targets demanding considerable expenditure of material and time is being ruled out.\*\*

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\* Lee Asher. Air Power. Translation from English. Foreign Literature Publishing House, 1958, p. 106.

\*\* Op. cit. The Tactics of a Modern Joint-Forces Battle,  
pp. 219-220.

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Counterintelligence measures are implemented not only in wartime but also in peacetime. In particular, documents and information are classified which in the opinion of military experts can be used by other countries for hostile purposes, the construction of military objectives is conducted taking into account security requirements, and concealment of important objectives from space and airborne reconnaissance means, deception of a potential enemy with respect to

own forces and capabilities, and training of personnel and preparation of combat equipment for an active struggle against his reconnaissance means and agents are carried out.

Scientific studies having a military potential have been subjected to the strictist classification in the USA. Thus, in the period of the work on the creation of the atomic bomb, scientists were isolated from the population. Everything connected with the word "atom" was purged from the scientific literature.\*

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\* Ralph Lapp. A New Force. On Atoms and Men. Translated from the English. Foreign Literature Publishing House, 1954, p. 199-200.

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The epidemic of secrecy, as the American scientists /35 refer to it, later embraced research in the area of the building and improvement of missiles and the mastery of space for military aims. Such an extreme classification of information was evoked, according to an assertion by several foreign experts, that 80% of the intelligence information of a military, scientific, and economic nature in peacetime comes from open sources: newspapers, magazines, statistical records, geographic charts, photographs, and radio and television broadcasts of countries being observed.\* Even military facilities often fall into this category of secrets.\*\*

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\* D. Wise, T. Ross. The Invisible Government. Translated from the English. Voenizdat, p. 233, 236.

\*\* Ralph Lapp. Op. cit., p. 214.

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American experts complain about the unnecessary classification of oceanographic research, 90% of which, in their opinion, does not contain any secrets.

In the postwar period the military deception carried out by American intelligence serves the aims of the cold war. In resorting to false propaganda on the Soviet threat, the Pentagon bosses are soliciting Congress for ever increasing appropriations for the arms race, and are truly serving the interests of military-industrial capital. At the same time a corresponding duping of the population is underway, and combat means, even those demanding a great deal of work, which are entering the arsenal of the Army and Navy are being praised. Thus, in the time he was Secretary of Defense, MacNamara spoke very

flatteringly of the ZEUS antimissile, although he knew that it is unsatisfactory.\* Vice Marshall E. Kingston-MacClaurey, believing that military deception is obligatory at the present time to intimidate a potential

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\* K. Mollenhof. The Pentagon. Translated from the English. Voenizdat, 1969, p. 141.

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enemy, is adhering to the same line of conduct.\*

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\* Op. cit. E. Kingston-MacClaurey, p. 93.

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In recent years the imperialist states have re-organized their intelligence organs, increased their activity, and are constantly upgrading the intelligence apparatus. This makes it incumbent upon the fighting men of the Soviet Armed Forces to be highly vigilant for plots by foreign intelligence agents, to strictly protect military and state secrets, to improve the art of concealment, and to master other forms of counterintelligence.

THE EXTENSION OF THE TERRITORIAL SEA OF MAURITANIA

by V. Minin

The Government of the Islamic Republic of Mauritania adopted a resolution on 10 June 1972 to extend the breadth of its territorial sea from 12 to 30 miles.

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The new territorial waters of Mauritania are measured in two ways: from a baseline running from Cape Blanc to Cape Timiris in the north, and from the low water line running from Cape Timiris to the Senegal-Mauritania border in the south.

The Mauritanian Government explains the extension of its territorial sea as being due to "the need to protect the fish resources in waters surrounding the territory of the country, which is in accordance with the recommendations of the Organization of African Unity and the FAO Committee."



THE COMBAT TRAINING OF A SECTION OR STATIONS  
AND KEEPING RECORDS ON IT

by Captain 3rd Rank A. Zakharchenko

It is well known that without well founded record /42 keeping of the results of combat training it is impossible to conduct a thorough analysis of it, to generalize its achievements and positive sides, and also to uncover deficiencies and the causes of them.

Only on the basis of a systematization and analysis of the actual material can correct conclusions be drawn on the effectiveness of one form or method of combat training or another and can recommendations be given to commanding officers at all levels with respect to its organization and conduct.

Warrant officers and petty officers have an important role in this. Being the leaders of the individual training of the nonrated men and the action stations, it is precisely they who give us the factual material on the basis of which an analysis is made of the training and conclusions are drawn on the level of execution of missions by the action stations and sometimes also by subdivisions.

Yet at one time in this area we did not have a strict methodology of record keeping of training results. While on the department head and ship CO level sufficient attention was devoted to this problem, we showed little concern for the perfection on the forms and methods of record keeping on combat training by section (action station, team) leaders. The "Petty Officer Notebook on the Combat and Political Training of Sections (Teams)" (Form No. 30) designed for this purpose has defects and the absence of a single methodology for keeping it creates much confusion and independent actions.

As is known, any combat training activity includes three stages--the training, and the keeping and summarizing of the results or a critique. Naturally there must be a close interaction and unity among them.

Let us dwell on this question in more detail. There are no disagreements in regard to the training stage.

It is generally known that by organization we mean to determine the make-up of the participants and leaders, to designate the time, formulate the subject, compile the schedule, prepare the training place, etc.

The order for conducting training measures has also been sufficiently covered and the organizational principles of training are clear: each chief trains his own subordinates; the practice training sessions in a specialty are conducted by section leaders with the personnel of the section (or group of nonrated men), in which groupings of navymen carry out the same function at one or several action stations; practice training sessions at action stations and individual drills are carried out at the signal "Combat training alarm" by action station leaders with representatives of the various sections and groups in the crew manning a single action station.

However, not all petty officers are action station leaders. Part of them, being section leaders, lead their subordinates in daily shipboard life, yet at the general quarters signal, these petty officers themselves man posts at action stations and carry out the duties of a team member. Here they do not lead the practice training sessions and individual drills.

The other part [of the petty officers] in daily life commands a section of specialists, and at general quarters commands a crew of an action station made up of representatives of different sections. Thus, for example, the crew of the action stations of a general purpose gun mount of a cruiser includes nonrated and rated men of sections of gunners, sight-setters, gunnery electricians, boiler room mechanics, chief boatswain's mates, and storekeepers. The picture is similar in the boilerman and engineman sections and in the damage control parties. Several of the action stations aboard ship are manned by a single man. All of this, of course, has no influence on the conduct of drills and practice training sessions.

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As for the third period of combat training--the summing up of the totals and an analysis of the training results, here revision is required. In order to make a serious analysis of a drill and correctly analyze what has been achieved, it is essential to have material characterizing the qualitative aspect of every training measure. In other words, data is needed on the calculation of the results of the practice training sessions and drills which were conducted. But where do you get it?

In order to answer this question let us look at who, where, and how the training of the nonrated men, sections, teams, and actions stations is recorded.

The petty officer notebook, as its name indicates, is kept by the section leaders and the team leaders. However, they only lead the special training of subordinates, but they do not handle the individual drills and practice training sessions. The action station leaders are occupied with this. This means that the section leader, if he is not an action station leader, does not keep entries on practice training at action stations and individual drills in his notebook.

When the action station leader keeps a notebook, then it is not clear how he should fill in the entry on practice training sessions in a specialty since he does not conduct them. All of this gives birth to the difficulties mentioned above. They can be eliminated in two ways. If the action station leader keeps the petty officer notebook, then in this case slight corrections in the organization of the practice training sessions must be entered. Let us examine a concrete example of the most suitable organization of them for a general-purpose battery. Here personnel from four sections are distributed in three action stations.

How should the practice training sessions in a specialty be organized and how should the records of them be kept?

First let us determine the number of groups of battery personnel for the practice training in specialties. It seems there are seven (breechworkers, loaders, layers, fuze setters, feeders, gunnery electricians, and magazine personnel). Each group needs a well trained leader and there are only three in the battery. How can this be? It is clear that it is best to conduct practice training sessions on a division scale. In this case the gun commanders will lead the practice training sessions and classes in the specialties for the personnel of all of the batteries in groups of breechworkers, loaders, layers, fuze setters, feeders, and magazine personnel, respectively. The location for the classes is the leader's gun. /44

It is useful to combine the group remaining without a leader, which operates the feed hoists (the gunnery electricians) with the hoist personnel of the light AA guns. In the light AA gun battery the gun magazine commander will also be the leader of practice training sessions in the hoist operator specialty. One of the feed hoists will be the area where the class is held.

To support the leadership of personnel training it is essential for the subunit commander, based on the ship-type training program, to enter the subjects for the practice training in a specialty, practice training at action stations, and individual drills in the petty officer's notebook in such a way that individual drills and practice training sessions at actions stations will be conducted simultaneously on the same subject and so that the subjects in a leader's notebook for the practical training sessions in a specialty would be for his group alone.

The second route which seems more correct to me is to develop and introduce three notebooks in place of the existing petty officer's notebook: a "Specialty Training Leader's Notebook", a "Section Leader's Notebook", and an "Action Station Combat Training Notebook".

The "Specialty Training Leader's Notebook" is set up for a year and should consist of three sections: a list of the specialty training subjects, a record of the attendance and progress of the students, and extended schedules (or brief syllabi) of the specialty classes. Similar notebooks are already being kept aboard many ships. However, being primitively made, they are extremely inadequate.

It is advisable for the "Section Leader's Notebook" to have basic reference data of the duties of a section leader, and excerpts from various aids and also the sections: practice training sessions in a specialty, a list of subjects, practice training schedules, a record of the practice training sessions, a record of training results, disciplinary practice, a summation of combat and political training results, and the progress of the execution of the Socialist obligations.

The "Action Station Combat Training Notebook" should provide for: excerpts from the bills; a guide on damage control measures, on the protection of personnel from means of mass destruction employed by the enemy, and on first aid; the action station crew; a list of damage control measures; subjects for practice training and individual drills; schedules for practice training sessions and drills; a record of their execution; and standards (individual and group) and a record of achieving them.

Experience dictates that the combat training of action stations should be planned according to the ship type training program. It is advisable for subunit commanders in this case to enter in the notebook the schedules

for the practice training sessions in a specialty, practice training, and individual training at action stations in advance for the whole year.

The proposals enunciated in the article are naturally disputable. Undoubtedly other experience has been gained on this question aboard ship. It would be interesting to learn the opinion of officers and warrant officers on this account. All of this would aid in developing concrete measures on improving the organization and record keeping on the combat training of sections and stations.

Photograph- p. 43, caption: The department head of a leading minesweeper, Senior Lieutenant V. Sukhoy, conducts a practice training session with the sweep crew.

THE BIRTH OF A MISSILEMAN

by Captain 3rd Rank I. Sotnikov

The weather sharply worsened on the approaches to the assigned area. The fog enveloped the guided-missile patrol boats so thickly that it was difficult to distinguish the silhouette sailing in the ship's wake. The great swell from the raging storm also made itself felt. The missile boat heeled sharply; it rolled from side to side, climbed the crests of the waves and then plunged downward and slowed down as it sliced into tons of water. /45

The navymen became especially alert. The powerful weapon of the missilemen had accustomed them to the idea that they had a reliable shield in their hands, and that they must be ready to attack at any moment.

A formidable weapon is a great responsibility for each individual in the common cause. Ahead lies a hard battle. The patrol boatmen had to find a group of "enemy" ships and launch an attack against it. The mission was not a simple one. For the "enemy" was active and would certainly elude them, oppose them.

An unusual silence reigned in the deckhouse. Even the division [divizion] commander was uneasy. More than once the experienced sailor had had to accomplish difficult missions. And always the missiles destroyed the targets with deadly accuracy. The division commander was now pondering which crew he would command to be the first to launch the attack after detecting the target.

"Captain-Lieutenant Lesin will launch the attack," he decided.

The officers in the deckhouse exchanged glances. Several expressed some doubt: For a commanding officer of a missile boat, Captain-Lieutenant V. Lesin was indeed young. But the Captain 2nd Rank was not disturbed by the doubts of the officers. After listing the merits of Lesin, he emphasized, "I am prepared to trust him even further."

He recalled a conversation heard once in the wardroom of a destroyer. They were talking about officer combat training. The name of officer Lesin, head of the gun-fire control section, was brought up. The destroyer CO

knowing the grade of the officer's service performance, was somewhat displeased with him.

"Is it true that Lesin knows his job poorly-- doesn't he show initiative in his work?" I asked.

"Well, yes, that can't be denied. The officer has a head on his shoulders. But he's dying to get on a guided-missile ship."

"What's so bad about that?"

"The desire is commendable," the destroyer CO persisted, "but there is also a need for specialists in rifled guns..."

Not really much time had passed from that moment up to the present cruise. And initially I thought the discussion concerned a guided-missile boat commander of the same name. However, that doubt was soon dispelled. It seems that over that short period of time Valeriy Alekseyevich Lesin went through important steps in the service. Through his exceptional work, he gained the favor of the destroyer CO, who gave him the "okay", and after the completion of classes, Lesin was promoted to the bridge of a missile boat. /46

...The situation in the deckhouse did not change, even when Lesin received the order. The commands rang out clearly. The missilemen acted calmly and skillfully. The boat CO established a business-like atmosphere. And even when any of the men became flustered, and reported on the situation confusingly and indistinctly, he calmly corrected the men and ordered them to repeat their reports. The confident and even voice of the commander helped the missilemen to concentrate on performing their duties.

To say that Lesin is completely calm would be false. He experienced emotions, perhaps more than others. For his leadership maturity was being evaluated today.

Some of his colleagues consider the Captain-Lieutenant a lucky man. Maybe it is so. But his successes are not accidental. Behind them lie tremendous work. A high degree of responsibility, tactical boldness and accurate estimation, self-control, tenacity, and quick reacting-- these are what helps an officer to train himself within such a short time to take the command of a powerful guided-missile boat.

What Valeriy Alekseyevich took over was not bad, but his successor had a passion for external effect. The men were accustomed to operating in a jerky manner and frequently only when prompted.

The missilemen grew accustomed to the new CO and settled down. A marked impression in the relationships of Captain-Lieutenant Lesin with his men was left by the Komsomol meeting at which the Socialist commitments for the next stage were discussed. The CO was among the first to speak up. This was a considerable surprise to the Komsomol members for the former CO had always summed up the point of the conversation.

The meeting was interesting. The Komsomol members supported the suggestion of the CO to strive for an outstanding rating for the ship. The struggle to realize this began after the meeting. Communist Lesin set the example. His influence was felt by all. Plans became more precise, and the jerky manner of the men, founded or unfounded, vanished. The CO himself worked with diligence. He analyzed the systems of the complex apparatus and mastered the units in the diesel compartment.

Captain-Lieutenant Lesin prepared carefully for each cruise. He studied the situation and made computations. That was also true for this occasion. He played through various variants of missile attacks, checked the crew's readiness for firing, and found time to talk with the Communists and to assign each one a mission for the cruise. He was confident of success.

The radar operators knew that it would be difficult to detect the targets, and even more so to identify them, and stood on watch attentively. Senior Seaman I. Mastryvkov experienced anew a certain joy. As in previous preparatory training, he exceeded the standards of a 1st class specialist and identified the targets almost with the faintest blip on the screen. This helped him once more in checking and defining everything more accurately as required.

The battle moved swiftly. The work of the CO himself was considerable. True, the automatic systems accomplish much. But the amount of work which remains requires considerable time. Lesin was successful even though he had to work long this time to precisely establish the location and movement characteristics of the target--indeed, the enemy was also not asleep.



Everything was now ready. The command was heard:

"Missile attack!..."

Captain-Lieutenant Lesin confidently pressed down on the firing button. The missile streaked toward the horizon.

After several minutes, the boat prepared for a repeat attack. The CO hastened to work out the results of the first attack. There was little time for preparations. But the men acted with confidence this time too. And once more--a direct hit.

...Not much time has passed since that memorable day. Since then the men of the boat under the command of Captain-Lieutenant Lesin have achieved the distinguished title of "outstanding" and have all become class specialists. Its Komsomol organization, for the successes in Socialist competition, was awarded the pennant of the Central Committee of the All-Union Lenin Young Communist League and has been entered into the Roll of Honor of the Political Directorate of the Red Banner Pacific Fleet.

The missilemen confirmed their skill in several more missile attacks. Captain-Lieutenant Lesin has acquired experience. As in the past, he is working with every ounce of his strength.

Caption on page 45: Captain 3rd Rank Yu. Kornilov, commanding officer of a missile boat, accomplishes the training combat missions with high marks. Without resting on his laurels, he continues to constantly elevate the combat readiness of his men. In the photo: Captain 3rd Rank Yu. Kornilov and Gunner Seaman I. Surkov on the flying bridge at sea.  
Photo by I. Nikishov

EDUCATOR OF RADIOMEN

Text and photo by Captain 2nd Rank G. Kotnitskiy

The young seamen look at the instructor with searching eyes. The instructor in turn looks at them with unconcealed curiosity and somewhat watchfully. This was his first lesson. In the opinion of the head of the school and of the seamen themselves, he conducted the lesson in a fascinating and interesting manner. Indeed, he had gone over the lesson in his mind more than once. To be sure, he was no novice in pedagogical theory. A graduate of an institute of electrical engineering, after starting duties in a training detachment, Genrikh Verkhovskiy prepared extensively and painstakingly for the lessons. He read through many books of well-known teachers, attended more than once the lessons of experienced colleagues, and became acquainted with the work of petty officer instructors of the training watches.

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During all those four years since that memorable day, the young officer trained his men and learned himself.

The work of a platoon commander and instructor is difficult and specific: he is both a leader and a general instructor. For example, Verkhovskiy had to immediately conduct political training, give instruction in radio and electricity courses, and the set up of radio transmitters and receivers, conduct practical training with his men in radio communications, study the regulations with them, participate in drill training, etc.

From the very beginning he strived to develop his subordinates' interest in Navy duty and in their future naval specialty. The officer actively participated in public activities and was selected secretary of a party organization.

The company was declared outstanding at the initial stage of the Socialist competition in commemoration of the 50th anniversary of the formation of the USSR. But ahead lie new tasks, one must keep this title and move farther ahead.

"Work is now far easier," the officer says. "My former students, Petty Officers V. Pikul'skiy and S. Yankevichus, have become watch instructors. I have confidence in them."

Twice a year the students of the school depart for ships, and twice a year everything must start from scratch. But even that has its compensation: the fruits of the intensive work are clearly visible.

As for the present, the instructor has no time to be glad of the rapid military development of navymen Grinev, Vagin, Lukin, and others, no time to even forget how much he had to work with the lagging navymen Karula and Kanchur, before a new group of students must be received....

And although it is not easy for Senior Lieutenant-Engineer Verkhovskiy (already now a senior instructor and company commander) in the cycle of everyday life, he does not regret the choice which was made and strives to work even better.

Caption: Platoon Commander Senior Lieutenant G. Verkhovskiy at specialty training.

PECULIARITIES OF ICE NAVIGATION

by Captain 1st Rank A. Yakovlev  
and Captain 2nd Rank L. Karamyshev

Ice navigation is more complex than ordinary navigation, due to the special navigation conditions; it requires serious training of the navigation department. The navigator should know the peculiarities of ice convoying; the rules for steaming behind an icebreaker; the terminology and conventional symbols used in the compilation of ice charts, reports and forecasts; the peculiarities of navigation and the operation of navigational instruments. All of these problems are studied under the direction of the flag navigation officer or independently. Special exercises and training are conducted with personnel of the navigation department to study the basics of close formation ice navigation (intervals between ships of 0.5-1 cable length), the rules governing ice observations and the keeping of maneuvering charts, and the characteristics of the operation and use of electronic navigational instruments at low temperatures and hull vibration. /63

In preparing the equipment, it is necessary to carefully check the mountings, condition of the soldering, contacts, terminal plates, and all electronic components which can be rendered inoperable by strong vibrations.

Frequent and irregular changes of course and speed are a significant characteristic of ice navigation. Since the logs cannot operate or can be used only infrequently in ice, the speed of the ship is measured by other means. An ice-drift meter is frequently used for this purpose; this is a triangle (made of wood or other material) with metal sight rods fastened to the corners. The drift meters are mounted on the bridge wings at an angle to the ship's side. The observer selects a conspicuous ice floe passing near the side of the ship; when it appears in the first sight line, he pushes a stop watch and stops it when the floe reaches the second sight line.

The speed is determined by the formula

$$V = \frac{1.94 L}{T},$$

knots

where L is the length of the base of the drift meter, in meters, and T is the elapsed time, in seconds.

Through this formula the navigator calculates in advance a table of speeds for the base of his drift meter. It is recommended that the drift meter be made in such a way that the base is no less than 30--50 meters. This method is simple and universal and requires only one observer, usually the helmsman, who keeps the maneuvering charts. The shortcoming of this method is that the base of the meter is inconstant and varies with the draft of the ship, which can lead to errors in the determination of speed. To eliminate error, a table is calculated for several values of the draft of the ship. In using the drift meter, it must be understood that ice drifts due to the effect of the wind and current and that this can also lead to errors. To reduce this error, it is advisable to sight the deeper seated and smooth ice floes, which are less subject to the influence of wind drift. When all these requirements are strictly observed, the error in the determination of speed by the ice-drift meter does not exceed 15%.

In very scattered ice (1/10th to 3/10ths cover), when the ship changes course infrequently, it is better to determine the speed by rotations of the engine.

All of the methods of dead reckoning\* described in navigation textbooks are based on the "five-minute plotting" method proposed long ago by Admiral S. O. Makarov.

We recommend the "rectified" courses method, developed by Captain 2nd Rank M. Sokolov, which has been verified in practice. At the present time it best satisfies the requirements of ice navigation. Its essentials are as follows:

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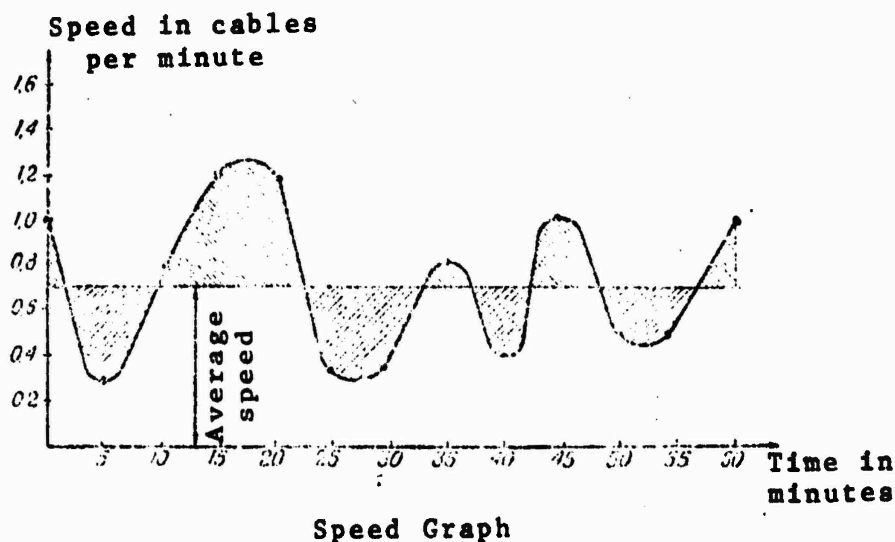
The navigator does not keep a constant plot, but at a certain interval he calculates and plots a dead reckoning fix on the chart. For calculation of the elements of dead reckoning there are special maneuvering charts on which the course is recorded at one-minute intervals, within a tolerance of one degree, the engine revolutions when changed, and the speed as determined on the ice-drift meter every 5--10 minutes.

For each hour or half hour of steaming the navigator compiles the maneuvering charts and prepares the data for plotting. In the open sea the dead reckoning position is plotted on the chart every hour, and every 30 minutes

when steaming near the coast and navigational hazards. From the maneuvering chart the navigator determines the sector in which the courses of the ship over the period of an hour are located; he divides the sector into several subsectors of 5--20° (depending on the size of the sector). In each subsector a mean course for the given subsector is taken as the "rectified" course (for example, within the subsector 80--100° the average course is equal to 90°, etc.)

The steaming time on the mean courses is determined by calculating the number of courses in each subsector, taking the time on each course as equal to one minute.

Having determined the "rectified" courses and the steaming time on each one of them, the navigator calculates the average ship's speed per hour of steaming, using a special graph (see figure).



On the x-coordinate steaming time is plotted, and on the y-coordinate, speed. Between the points plotting the speed (from the ice-drift meter) on the graph a curve is drawn representing the change in speed over time. Then a line is drawn parallel to the x-coordinate (time) so that the areas above and below this line and the speed curve are equal to each other. The point of intersection of the line and the y-coordinate (speed) indicates the average speed for the hour, which is used for calculating navigation on each "rectified" course. The plot of "rectified" courses and steaming on them is made on a maneuvering board or millimeter square graph paper on a large scale. The course made good and great circle distance for the hour are transcribed from the maneuvering board to the track chart and the dead reckoning fix is plotted. The navigator enters

all calculations in Table 1.

In few cases of working out the maneuvering records do all operations for obtaining the dead reckoning position take the navigator more than ten minutes. This is very important while navigating under complex ice conditions, when the navigator must, in addition to this work, observe the ice situation and help the captain in problems of maneuvering.

Ships having dead reckoning tracers use automatic dead reckoning as the basic method of dead reckoning while navigating in ice. DR tracers permit calculation of all changes in course and speed with great precision during maneuvering. When the speed log cannot be used, the speed is fed into the dead reckoning tracer manually. Automatic dead reckoning is checked by the graph method. Some dead reckoning tracers have a plotting limit of  $75^{\circ}$  of latitude. In order to operate them in higher latitudes, a ratio of latitude between the main parallel and the current parallel is artificially devised so that the scale devised corresponds to the current latitude of navigation. The latitude of the main parallel is constant and is equal to  $60^{\circ}$ .

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The current latitude is set in the DR tracer from the latitude of the position shown in Table 2; this latitude can be calculated for even higher latitudes. The dead reckoning tracer is also used as a plot for work on a fixed scale. The course made good and the great circle distance are taken from the plot at certain time intervals and transferred to the track chart.

Strong hull vibrations and concussions when the ship strikes the ice, low air and water temperatures, and the high latitudes and great disturbances of the earth's magnetic field during magnetic storms affect the operation of navigational instruments while operating in the Arctic and Antarctic. With heavy jolts against the ice, the gyrocompass can be knocked up to  $5^{\circ}$  off true north. Gyrocompasses work very unstably in high latitudes; their sensitive elements are not adjusted for latitude. Inertial error of the first order arising from the ship's maneuvering can attain  $3-5^{\circ}$  in such gyrocompasses.

Table 1

Subsector grouping in degrees	Mean Course of subsector in degrees	Steaming time on mean courses in minutes.	Average speed cables/min.	Distance on mean course in cables
10-20	15	3	0.7	2.1
20-30	25	8	0.7	5.6
30-40	35	25	0.7	24.5
40-50	45	15	0.7	10.5
50-60	55	9	0.7	6.3

Table 2

Latitude of ship's position	Latitude set on the automatic DR tracer	Latitude of ship's position	Latitude set on the automatic DR tracer
75°00'	60°00'	76°40'	63°30'
10'	60°21'	50'	63°51'
20'	60°42'	77°00'	64°12'
30'	61°03'	10'	64°33'
40'	61°24'	20'	64°54'
50'	61°45'	30'	65°15'
76°00'	62°06'	40'	65°36'
10'	62°27'	50'	65°57'
20'	62°42'	78°00'	66°18'
30'	63°09'	10'	66°39'

Stem-mounted hydrodynamic logs can be used when navigating in open ice (up to 5/10ths ice cover), when the ship still has the capability of avoiding the ice.

One must bear in mind that the hydrodynamic pressure receivers are frequently obstructed by little bits of ice, and that striking against the ice breaks the setting of the compensation measuring system, and the log correction, as a rule, changes. When the ship is following an icebreaker at a distance of 0.5-1 cable, the log readings will be distorted by the current from the icebreaker's propellers, and it is impossible to compensate for this.



In using radio D/F, it is necessary to constantly check the condition of the antennas. Low air temperatures and high humidity can ice up the antennas, and result in full loss of their insulation and inoperability.

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Let us dwell for a moment on the peculiarities of determining a ship's position when operating in ice. Determining position by the sun is, as a rule, accomplished in low altitudes of the celestial body, when there is probably great error due to astronomical refraction; therefore, it is not recommended that this method be used at altitudes less than  $5^{\circ}$ . Small altitudes of the sun measured by a marine sextant must be corrected by obtaining a semidiameter by observation and by measuring the inclination of the visible horizon by a dip circle.

Errors in the determination of a ship's position by radiobeacon during operations in ice and high latitudes increase significantly due to unstable operation of the gyrocompass and variation in its correction, which can lead to error in the coordinates. In order to reduce random errors in radio DF, it is necessary to take a series of 3-4 observations every 10-15 minutes, relate the fix to one moment, and take a mean.

During magnetic storms, great scattering of radio bearings and instability of the measured parameters of radio navigation systems are observed; therefore, it is not recommended that position be determined by electronic equipment. In evaluating radiobeacon observations, one must never disregard the dead reckoning fix, even though dead reckoning also involves some error.

In obtaining fixes by radar, one must consider that shore ice or drifting ice near the coast sometimes distorts the outline of the coast on the radar scope so much that it is difficult to identify it; thus an inexperienced operator may permit great error. If the coast is high, then the lines of the shore ice and the coast line are very prominent, the reflection from the coast being clearer. In order to identify the coastline, it is necessary to slowly reduce the amplification of the receiver until the weaker signal from the ice on the scope disappears but the depiction of the coast is still prominent, and only then to take a fix. In order to detect and identify small islands and landmarks, radar observation must commence at a distance of 8-10 miles, when the ice has not yet appeared on the scope and does not impede observation.

In reduced visibility and at night, radar surveillance of ice conditions is conducted continuously. The DON and DONETS types of navigational radars detect all types of ice at distances ensuring safe navigation. The edges of ice fields are clearly outlined on the scope at distances of 2-3 miles. Navigation by radar data under low visibility conditions is possible in open ice (up to 4/10ths to 5/10ths cover). But in broken to close ice (above 6/10ths cover) it is difficult to get oriented on the scope, because a large part of it is illuminated and the blips from the ice merge.

One must bear in mind that smooth ice fields are not picked up on the scope and can be mistaken for patches of open water. Surveillance must be conducted at very long ranges (without increasing the amplification of the receiver so that the scope is not excessively illuminated), periodically adjusting the set to 3-5 miles to evaluate long-range ice conditions.

In traveling in company, a maneuvering board with the positions of all ships plotted should be kept on each ship. Detection of the other ships is made difficult by the fact that at distances of less than five miles it is almost impossible to distinguish ships on the radar scope. from the blips from large floes. Only an experienced operator can detect a moving target in a field of immobile ice. At ranges greater than five miles a ship can be detected just as it is in open water.

Safe navigation in conditions of low visibility is ensured by efficient cooperation between the navigation department and the radio personnel of the ship, by timely delivery to the captain of information on ice conditions, and by rendering assistance to him in problems of maneuvering when selecting courses through the ice.

"UNDERWATER TANKERS"

by Candidate of Technical Sciences Yu. Plenkin

(Based on materials from the foreign press.)

The necessity of increasing the speed of ships has attracted the attention of shipbuilders of various nations to underwater cargo ships. In tankers it is easier to solve many of the specific problems associated with underwater navigation. In particular, sealing the intakes of the loading pipes presents no special difficulty. The creation of waterproof hatch covers of large dimensions on underwater dry cargo ships is especially difficult at the present time from a technical standpoint. It must also not be forgotten that POL cargoes are more than one half of all cargo shipped by sea.

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The interest in underwater POL shipment is explained by the fact that waves are not formed on the surface of the sea from the movement of underwater vessels, and consequently, there is an absence of wave resistance, which sharply increases for surface cargo vessels when their speed is above 16--20 knots.

With underwater cargo ships there are also other advantages in relation to speed: the propellers operate under more favorable conditions, and they therefore have a higher efficiency factor; and there is an absence of the loss of speed unavoidable for surface vessels from bad weather and other factors. All this, despite the total increase in area of wetted surface, means that beginning at 15--17 knots, underwater tankers require less power than surface tankers of the same cargo capacity.

Rolling, causing much unpleasantness, is unusual for underwater cargo ships.

The hull weight of large underwater tankers is less than for surface tankers of equal cargo capacity. This is explained by the fact that it is possible to transport POL cargoes in compartments within the outer hull,

due to their virtual incompressibility.\*

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\* Some of the cargo tanks have to be positioned in the pressure hull for the following reasons. On return trips, after the oil has been off-loaded into light tanks, compensating water is taken on lest the tanks collapse from side pressure. As is well known, the specific gravity of sea water is greater than the specific gravity of PCL products, and if all the tanks are filled with water, then the balance of buoyancy is broken. Thus during return trips some of the cargo tanks in the pressure hull are left empty.

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It should be noted that still another advantage of underwater vessels is their ability to navigate under ice, which considerably reduces the length of the trip. Thus, for example, the distance between Tokyo and London on a transpolar voyage under the ice is almost 5000 nautical miles less than the usual southern route through the Suez canal (not to mention the trip around Africa).

The ability of underwater tankers to travel beneath the ice in the Arctic the year round takes on greater importance now that colossal deposits of oil have been discovered in the polar regions (for example, in Alaska). The removal of this oil by surface vessels is very difficult and can only be done in the summer, as indicated by the recent voyage of the tanker MANHATTAN. The American firm General Dynamics suggested to the oil corporations the construction of a series of six twin-screwed underwater tankers each with a cargo capacity of 170,000 tons and a speed of 18 knots; they are intended for year-round sub-ice transport of oil to the Atlantic ports of the USA through the Northwest Passage.

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The development of shipboard nuclear power plants opened broad possibilities for the design of underwater cargo ships. But notwithstanding the fact that scores of designs have already been created in various countries of the world, up to this time not one underwater nuclear tanker has been constructed. This is explained by a number of shortcomings inherent in such vessels. To take the most important: the high cost of construction, which is more than twice the cost of surface tankers with the same deadweight capacity and load draft in a surface condition (with a circular cross section, which is optimal from the standpoint of speed; see Fig. 1); the absence of a

reserve of buoyancy in a submerged condition, i.e., underwater watertight integrity (this shortcoming takes on special importance due to the lack of sailing directions for underwater voyages; the relief of the ocean floor is still relatively unfamiliar to man). Furthermore, existing shipbuilding and ship repair yards are not equipped to build and repair large underwater vessels. In particular, the docking of underwater supertankers is very complicated.

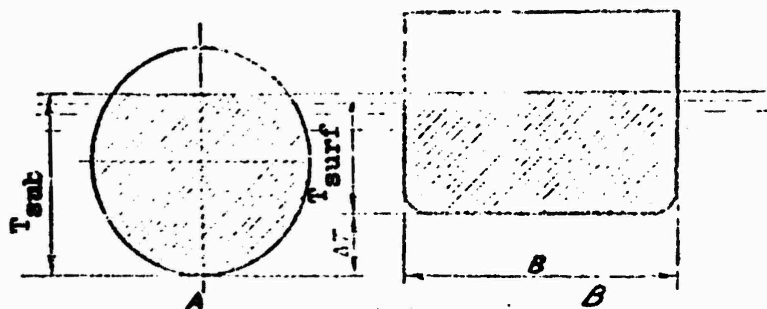


Fig.1. Difference in draft  $\Delta T$  of surface and underwater (with circular cross section) cargo ships. a.) Underwater b.) Surface.

The high cost of construction and operation means that the threshold of speed at which the economic advantages of underwater navigation arise will be substantially higher (in the press the figure of up to 22 knots is given).

However, it must be understood that we are talking about still unfulfilled plans for underwater tankers, the designs of which are far from optimal but which have greater possibilities for perfection than the designs of surface cargo ships developed over centuries.

It must also be kept in mind that where the length of voyages is reduced through the use of the under-ice trade routes, the results of the economic comparison of underwater and surface tankers are sharply changed in favor of the former.

The unremitting interest in underwater vessels in capitalist countries is also explained by purely military considerations. In the opinion of foreign specialists, surface vessels will become extremely vulnerable in the event of nuclear war.

Under these conditions, to provide maritime delivery of military cargoes as well as strategic raw materials, underwater tankers and cargo ships can be used successfully. Among the missions which vessels of this type are capable of fulfilling: the delivery of fuel, military stores, and rations to besieged island garrisons and operating task forces at sea, the transport of amphibious landing units, etc.

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With the development of nuclear power engineering substantial reductions in the cost of power plants can be expected. Thus, for example, the cost of nuclear reactors of the new aggregate CNSG-III type, made by the Babcock & Wilcox Company, is 20--25% less than the cost of a conventional nuclear power plant, with a significant improvement in weight-dimension characteristics (the total weight of the power plant, including the weight of the biological shielding is reduced 3--4 times).

Problems involving living conditions on underwater tankers will be solved much easier than on military submarines, since the length of voyages on the former will not exceed 10--15 days.

With the automation of shipboard processes, the size of the crew will be steadily reduced. This facilitates the creation of comfortable living conditions.

It must be noted that underwater tankers must take on a very large amount of solid ballast to reduce excess buoyancy. As has already been mentioned, the weight of the hull is relatively small and the specific gravity of the POL cargoes transported is substantially less than the specific gravity of water. The unavoidable presence of such an amount of solid ballast also has some positive features.

First, this can facilitate the partial solution of the problem of underwater watertight integrity of tankers by using a so-called safety drop keel attached to the bottom of the underwater tanker.

Secondly, part of the solid ballast is effectively used to reinforce the biological shielding of the nuclear reactors, which helps to achieve a high degree of radiation safety.

Lastly, the presence of a large amount of solid ballast enables the vessel to achieve better stability and trim.

As has already been noted, a major shortcoming of underwater cargo ships is their increased full-load draft while operating in a surface condition. It must be pointed out, however, that this problem is not as severe as we have said for underwater dry cargo ships. Indeed, tankers can conduct loading operations in a roadstead at berthing-loading buoys. When necessary, for instance for repairs, they can enter ports at reduced draft.

Sectional construction can be used to cut the full-load draft of tankers almost in half.

Figure 2 shows an underwater cargo ship of sectional construction at the moment of separation after surfacing. By filling special tanks it is folded out into two halves, and the draft of each is almost half of the draft of a nonsectional underwater tanker. The power plant, living space and other vitally important centers of the vessel are located in a rotating compartment which remains in a vertical position with any inclination of the halves, due to the solid ballast located in its lower section. Both halves of the tanker are attached at the bottom by hinges.

The use of this design facilitates construction of underwater tankers on existing building slips of shipyards, since both halves can be built separately and coupled afloat.

The appearance of underwater tankers will be made sooner if the problem of laminarization of the boundary layer is solved. Some successful experiments in this area have already been conducted (for instance, a Cramer-type shock-absorbing hull or the addition of small amounts of high-polymer substances into the sea water).

The development of underwater tankers can be expedited by efforts to increase the efficiency of heavily-loaded propellers by shrouding them, and by using coaxial propellers.

Thus, all the technical difficulties associated with construction of underwater tankers are fully surmountable with modern technology.

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A great push would be given to the construction of underwater tankers by the exploitation of Arctic oil deposits. Here other methods of carrying out the oil, including pipelines, will not be able to compete with the all-season and relatively inexpensive transportation of oil on underwater tankers.

Photograph- p. 87, caption: Proposed overall view of underwater cargo ship of sectional design.



THE EXHIBITION OF THE ACHIEVEMENTS OF THE NATIONAL  
ECONOMY OF THE USSR DEMONSTRATES LASER EQUIPMENT

The ELT-1B Electronic Laser Target Range

Among the many exhibits in the "Machinebuilding-72" Pavilion the electronic laser target range designed for conducting practice firing training evoked particular interest. It includes a laser rifle, a portable power source, and an electronic light-sensitive target with a hit indicator. /90

The rifle does not differ in external form or weight from a standard rifle. An LG-56 laser is located in the trigger housing; the firing mechanism triggers the laser light pulses through the optical system.

The power unit supports two rifle operating modes--a continuous mode and a pulse mode. In the continuous regime the laser produces a constant beam which makes it possible to make adjustments and to spot errors in aiming and firing. The pulse operating regime is the main regime for ordinary aiming and firing.

The electronic light-sensitive target consists of a set of light-conducting cones, the end section of which forms the target (concentric circles) and of an electronic power circuit of a set of photoconductive cells located at the apex of the cones. The electrical circuit of the target is made in such a way that when the beam strikes the junction of two cones, the larger value number will appear on the hit indicator (the "higher-score line"--a point for the shooter!). The target is connected by a special cable to the hit indicator which can be set up beside the shooter or by the training instructor. The result of the hit is registered in the form of a lighted number in one of the windows of the indicator.

The electronic laser target range can be readied for a firing training class in two to three minutes. The firing from the electronic laser weapon is safe both for the rifleman and for those around him. The need to build a firing range, trenches, and other facilities is eliminated.

### Technical Characteristics

Firing range	25 m
Firing rate	20 per minute
Power voltage	220 volts
Required power	55 watts
Weight	4.5 kg

### Laser Cuts Profiled Glass

The device is designed to produce a local weakening of the strength of glass due to the effect of a focused laser beam in the 10.6  $\mu$ m range for the purpose of subsequent mechanical breaking of the glass along a given profile. It is equipped with two sealed CO<sub>2</sub> lasers with a power in a continuous mode of 25 watts and with two movable focussing systems which are displaced in one plane along the direction of the cut. This permits cutting profiled glass in two opposite planes in the form of a rectangular box, channel, corrugated, or other cross section and also sheet glass. The device is fully automated.

### Technical Characteristics

Glass cutting speed	up to 3.5 m/sec
Maximum profile height	60 mm
Maximum glass width	600 mm
Glass wall thickness	up to 10 mm
Cooling	water
Flow rate of water under 1.5 atm pressure	1.0 liter/min
Electric power	220 v (2.0 kw)
Dimensions	3350x1410x500 mm
Lifetime with constant operation	6 months

### LV-5 Laser Sighting Device

The device is designed for setting the direction and controlling the position of some sort of object or equipment. It can be used for geodetic work, geometric and trigonometric leveling, and for setting vertical and horizontal angles.

### Technical Characteristics

Laser wavelength	0.6328
Radiated power	0.5 watts
Divergence angle	30"
Magnification of Optical system	25 X
Beam diameter at output	34 mm
Focussing limits	from 2 m to $\infty$
Graduation scale of the cylindrical level	17"--23" per 2 mm
Graduation scale of universal level	7'--15' per 2 mm
Operating range of instrument	2000 m
Beam diameter at distances of:	
200 m	20 mm
500 m	50 mm
1000 m	100 mm
2000 m	200 mm
Limit of angular measurement, degrees	$\pm 10$
Graduation scale of measuring micrometer for angular measurements	- 15"
Power from a-c network:	
voltage	220 volts
frequency	50 Hz
Filament voltage	9 $\pm$ 0.5 volts
Anode voltage	1.2 $\pm$ 0.3 kv
Anode voltage at maximum radiation	8 ma
Meter:	
weight	5.2 kg
dimensions	400x190x260 mm
Power unit:	
weight	5.5 kg
dimensions	240x180x180 mm